

Overnight Hospital Stay After Colon Surgery for Adenocarcinoma

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ABSTRACT

A short hospital stay is one of the main advantages of the laparoscopic surgical technique. The process of developing and studying the “fast-track” process has contributed to a better understanding of the elements of perioperative care and has resulted in the reduction in length of stay (LOS) after colectomies. As we follow and refine this well-recognized multimodal approach, further decreases in the LOS can be expected. We present 2 octogenarian patients who, after receiving laparoscopic hemicolectomies for malignant disease, were discharged home <24 hours after their operations. Postoperative follow-ups did not show any adverse reaction to the early discharge. Modifying the multimodal perioperative technique with further refinement to the surgical technique appears to allow patients to be discharged home in the first 24 hours following laparoscopic colectomy.

Key Words: Length of stay, Colectomy, Multimodal rehabilitation, Fast-tracking.

INTRODUCTION

As the healthcare industry faces a cost crisis, it is incumbent upon healthcare professionals to identify and reduce unnecessary practices without worsening patient outcomes. A new procedure that creates both a reduction in cost and improved patient outcomes is indeed desirable. Hospital stays after a colectomy constitute a large percentage of the entire procedure's cost. If early hospital discharge after colectomies has either no effect or a positive effect on procedural cost, then it makes sense to incorporate early hospital discharge. This begs the question, however: at what time frame does discharging a patient begin to have a negative effect?

Currently, the average hospital length of stay (LOS) after a colectomy is 7 days to 10 days in the United States and over 10 days in the United Kingdom, France, Germany, Italy, and Spain.¹⁻³ However, a trend is emerging toward shorter LOS following colectomies by changing the perioperative procedures. For over a decade, Dr. Henrik Kehlet and others in Denmark have developed a “multimodal rehabilitation” method of mitigating postoperative complications, which has improved patient outcomes while dramatically eroding hospital LOS requirements.^{4,5} His method targets the harmful effects that the surgical stress response has on organ function, and he reasons that by reducing this stress response, the associated complications will also be reduced.⁶ The essential elements of the multimodal rehabilitation, or “fast-tracking,” procedure are epidural anesthesia, enforced early mobilization, early enteral nutrition on the day of surgery, restricted IV fluids, and aggressive postoperative nausea and vomiting (PONV) prophylaxis.^{4,7} This multimodal procedure results in an average 2 day to 5 day LOS.¹ This research has been duplicated with similar results in the United States.^{8,9} Fast-tracking not only reduces LOS, but there also appears to be no associated risk of complications, even when patients are sent home as soon as 48 hours after surgery¹⁰; in fact, morbidity is reduced. One study showed that elderly patients (aged 70 years and older) who follow the fast-track rehabilitation program experienced 12% less morbidity and earlier discharge.⁷ While the procedure is not yet mainstream, fast-tracking is poised for wider implementation. A recent survey of US hospitals revealed that 30% of surgeons and a few hospi-

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tals use a multimodal rehabilitation method, but most surgeons would support nationally endorsed guidelines.⁹

Minimally invasive surgical techniques are associated with fewer complications, shorter hospital stays, and lower costs than are open surgery.^{11–13} Because fast-tracking is heavily associated with the laparoscopic surgical technique, one may wonder if the benefits we observe with fast-tracking are produced only by the minimally invasive nature of laparoscopy. Evidence does not support this; in fact, the multimodal approach appears to have a greater impact on postoperative recovery than does the laparoscopic technique.^{10,14} A study of elderly patients who underwent open colon resections reveals that an early postoperative feeding protocol, an essential element of fast-tracking, resulted in a mean hospital stay of 3.9 days and lower morbidity.¹⁵

While this 2 day to 5 day LOS afforded by fast-tracking pushes the boundaries of conventional colectomy procedures, there is reason to believe that those boundaries can be safely pushed even further. Discharging patients as early as 48 hours after either laparoscopic or open surgery has shown no increased risk of complications when the fast-tracking methodology is used.¹⁰ What would happen if the patient were sent home 24 hours after surgery? In 2002, Dr. Kehlet predicted that a 1-day to 2-day LOS would soon be feasible.⁴ Gash et al¹⁶ recently reported success with a 24-hour to 48-hour LOS associated with laparoendoscopic single-site colectomies (8 of 20 cases had a 24-hour LOS).¹⁶ We present 2 patients who had an LOS of <24 hours following colectomy surgery using fast-track perioperative procedures.

METHODS

A retrospective review of a single surgeon's practice cases in 2010 showed 2 patients who, after laparoscopic right hemicolectomies for adenocarcinoma, were discharged home in <24 hours following admission to the surgical ward. A laparoscopic technique was used on both patients, and access to the peritoneal cavity was made initially through the umbilicus with the placement of a Verrees needle. Once the pneumoperitoneum was established with the insufflation of up to 15mm Hg of CO₂, a 12-mm bladed trocar was placed through this same incision. The intraabdominal visualization was obtained with a 5-mm 30-degree telescope. Two to 3 additional 5-mm trocars were placed to complete the procedure. One of them was always placed approximately 5cm above the 12-mm trocar in the midline. Depending on the need, additional trocars were placed either in the hypogastric area or opposite lower quadrants. Standard, straight instru-

mentation was used to grasp tissue, and mobilization of intestines was performed using an Ultracision Harmonic scalpel. The dissection was carried out methodically starting with creation of the "window" through the mesentery of the transverse colon laterally to the second portion of the duodenum. Further dissection was carried out on the medial aspect of the ascending colon toward the ileocolic vessels, which were then divided close to the mesenteric root by using the Harmonic scalpel between the hemoclips placed individually on the artery and vein. Then the right colon was mobilized medially by dividing the retroperitoneal attachments along the line of Toldt and by cutting the hepato-colic ligament. With a completely mobilized right colon, the extracorporeal part of the procedure was performed. The umbilical and epigastric incisions were connected, forming a 5-cm long minilaparotomy. A small Alexis retractor was placed for adequate exposure and wound protection. The appropriate segment of the bowel, containing pathological changes, was resected with 2 applications of a linear cutter. A side-to-side staple anastomosis was created by using one load of a linear cutter to form a common channel and one load of a linear stapler to close the common opening. The anastomosis was reinforced with a running 3-0 Vicryl suture. The fascia layer of the incision was closed with a running PDS 1 suture. The skin was closed with monocryl 4-0 and a topical skin adhesive.

Both patients had invasive malignant disease and required extensive harvesting of the mesenteric tissue for lymph node sampling. The average age was 82 years old. Both patients were placed on an oral diet immediately after the procedure and had active bowel sounds and were passing flatus on the first postoperative day.

RESULTS

Case 1

Our first case is an 84-year old female who presented with a positive fecal occult blood test during a routine examination. She had a history of hypertension, hypercholesterolemia, glaucoma, skin cancer, Type 2 diabetes, a tonsillectomy at age 15, and an appendectomy and hysterectomy at age 42. A subsequently performed colonoscopy and pathology report revealed a mass in the cecal area that was shown to be a tubovillous adenoma.

The patient was admitted on the day of the surgery, and a standard laparoscopic right hemicolectomy was performed, whereby the right ascending colon was resected.

Postoperative care included early ambulation, no pharmacological bowel preparation, a liquid diet starting the day after the surgery, removing the Foley catheter the morning after surgery, and IV fluid restrictions. The postoperative course was uneventful, and the patient was discharged the next day (20 hours after surgery); a follow-up visit was scheduled for 5 days after the surgery. Propoxyphene 100mg was prescribed for pain control. Discharge instructions included no driving or lifting until after the follow-up appointment, a full liquid diet, and call to report any swelling, redness, draining, fever, or increased pain around the incision sites.

The final pathological report revealed a moderately differentiated invasive adenocarcinoma of the cecum, arising in tubulovillous adenoma. The tumor extended deeply into, but not entirely through, the muscularis propria. Two of 18 lymph nodes tested positive for metastatic carcinoma.

Thirty-four days after the surgery, the patient reported feeling well and was ready to begin chemotherapy treatment. The patient was diagnosed with Stage III colorectal carcinoma; a CT scan of her abdomen and pelvis indicated metastatic disease to the liver.

Case 2

Our second case is an 80-year-old male with a history of osteoarthritis, insomnia, skin cancer, hyperparathyroidism, hemochromatosis, hypothyroidism, a tonsillectomy, and left and right knee replacements. Seventeen days prior to the colectomy, a colonoscopy was performed, which revealed a large and sessile umbilicated mass in the right colon that was suspicious for malignancy. The patient was admitted to surgery with rectal bleeding as a chief complaint. A laparoscopic right hemicolectomy was performed, and a sessile fungating tan tumor measuring 3.9 x 3.3cm with extension into the muscular wall was found upon opening the colon. The patient received the same postoperative care as the patient in Case 1. He was released <24 hours after the surgery with no postoperative complications or adverse reaction observed.

DISCUSSION

These 2 cases support the idea that, when using a multimodal approach, laparoscopic colectomies can be performed with an LOS of <24 hours at no additional risk to the patient than that which is associated with standard and fast-track perioperative procedures. Modifying the multimodal perioperative rehabilitation and refining the surgi-

cal technique allows patients to be discharged within the first 24 hours after surgery, thereby benefiting the patient in at least 2 ways. First, a multimodal approach has shown that restoring natural bodily functions as soon as possible mitigates morbidity. At least 3 of the essential elements of fast-tracking—enforced early mobilization, early feeding, and restricted IV fluids—facilitate this process and tend to naturally occur when the patient is discharged. Second, with each day of reduced LOS, perioperative costs are reduced and the available resources of a hospital are increased. While a laparoscopy is more expensive than an open colectomy, the laparoscopic method is preferable due to outcomes, and the price is mitigated by a generally shorter LOS.

The outcomes reported in these case studies raise the question of whether the risks outweigh the benefits. If the success observed in these 2 case studies parallels the same success we have already seen with fast-tracking, then there would appear to be a paucity of risk relative to the benefits, which have the potential to be pervasive. However, these risks should be mitigated through follow-up appointments. After colectomies, especially with shortened LOSs, careful follow-up is necessary because of the risk of anastomotic leaking, which is the most detrimental complication of colonic surgeries and is usually observed after the fifth postoperative day.

CONCLUSION

A fast-track perioperative procedure with an LOS of ≤ 24 hours may achieve the same low-risk, low-morbidity results that fast-tracking currently produces with even less cost to patients and the hospital. Additional research is needed to fully investigate the risks and benefits of such a procedure. A prospective trial should be considered for further evaluation of not only this technique, but also “fast-tracking” with just an overnight stay.

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